

3GPP TSG-CN Meeting #22
10th - 12th December. Maui, Hawaii.

NP-030565

Source: TSG CN WG3
Title: CRs on Rel-5 Work Item E2EQoS.
Agenda item: 8.5
Document for: APPROVAL

Introduction:

This document contains **3** CRs on **Rel-5 Work Item E2EQoS**, including the corresponding mirror CRs (as required).

These CRs have been agreed by TSG CN WG3 and are forwarded to TSG CN Plenary meeting for approval.

WG_tdoc	Title	Spec	CR	Rev	Cat	Rel
N3-030770	Source addresses in packet classifiers	29.207	111	1	F	Rel-5
N3-030809	Session modification without adding or removing media lines	29.208	051	2	F	Rel-5
N3-030810	Approval of the QoS Commit as a part of the authorization decision for early media	29.208	050	2	F	Rel-5

CR-Form-v7

CHANGE REQUEST

29.207 CR 111 # rev 1 # Current version: 5.5.1

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the # symbols.

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	# Source addresses in packet classifiers		
Source:	# TSG_CN WG3		
Work item code:	# E2EQoS	Date:	# 22/10/2003
Category:	# F	Release:	# Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)	2	(GSM Phase 2)
	A (corresponds to a correction in an earlier release)	R96	(Release 1996)
	B (addition of feature),	R97	(Release 1997)
	C (functional modification of feature)	R98	(Release 1998)
	D (editorial modification)	R99	(Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900 .	Rel-4	(Release 4)
		Rel-5	(Release 5)
		Rel-6	(Release 6)

Reason for change:	# The current text in the TS does not specify how the packet classifiers are set up. It just says which parameters shall be taken from SDP, but it does not say which SDP nor how the parameters in the SDP and in the packet classifier relate to each other. The TS says: ". If the source IP address is not identified by the SDP information ..." while the source IP address is never present in SDP, but the source address can be deduced (as the destination address is always present).
Summary of change:	# The use of SDP parameters for defining packet classifiers has been clarified. Redundant text has been removed.
Consequences if not approved:	# Misleading specification which may lead to inconsistent implementations.

Clauses affected:	# 4.3.1.3 and 5.2.1.1						
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table>	Y	N	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Other core specifications	#
Y	N						
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
		Test specifications	#				
		O&M Specifications	#				
Other comments:	#						

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- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

1st proposed change**4.3.1.3 Gate function**

The Gate Function represents a user plane function enabling or disabling the forwarding of IP packets. A gate is described by a set of packet classifiers that identify IP flows associated to the gate. The packet classifier includes the standard 5-tuple (source IP address, destination IP address, source port, destination port, protocol) explicitly describing a unidirectional IP flow.

The packet classifier is received from the PDF in an authorisation decision. ~~In the packet classifier the source IP address shall be taken from the SDP information if provided. Otherwise, for bi-directional flows the operator may choose to identify the source IP address from the 64 bit prefix of the destination IP address in order to reduce the possibilities of bearer misuse. If the source IP address is not identified by the SDP information and not identified by the 64 bit prefix of the destination IP address then the source IP address shall be wild-carded by the PDF. If the source port number is not identified by the SDP information then the source port number shall be wild-carded by the PDF.~~

The GGSN installs the packet filter corresponding to the packet classifier. The packet classifier includes the status that the gate shall be set to.

The commands to open or close the gate lead to the enabling or disabling of the passage for IP packets. If the gate is closed all packets of the related IP flows are dropped. If the gate is opened the packets of the related IP flows are allowed to be forwarded. The opening of the gate may be part of the authorisation decision event. The closing of the gate may be part of the revoke authorisation decision event.

IP Packets matching a SBLP supplied filter are subject to the gate associated with that packet filter. In the uplink direction, IP packets which do not match any SBLP supplied filter shall be silently discarded. In the downlink direction, IP packets which do not match any SBLP supplied filter shall be matched against TFT supplied filters that are installed for PDP contexts where SBLP is not applied.

2nd proposed change**5.2.1 SBLP decisions****5.2.1.1 SBLP authorisation decision**

The information needed for the PDF to perform media authorization is passed by the P-CSCF upon receiving a SIP message that contains SDP. The SDP contains sufficient information about the session, such as the end-points' IP address and port numbers and bandwidth requirements.

All media components in the SDP are authorised. The media components contain one or more IP flows each represented by a flow identifier. Cf. the definition of flow identifier in clause 3.1. The P-CSCF shall send policy set-up information to the PDF upon every SIP message that includes an SDP payload. This ensures that the PDF passes proper information to perform media authorization for all possible IMS session set-up scenarios. The policy set-up information provided by the P-CSCF to the PDF for each media component shall contain the following:

- Destination IP address;
- Destination port number;
- Transport Protocol id;
- Media direction information;
- Direction of the source (originating or terminating side);
- Indication of the group that the media component belongs to;

Editor's note: The format of this group indication in SIP/SDP is subject to CN1's decision.

- Media type information;

- Bandwidth parameter;
- Indication of forking/non-forking.

Additionally, upon the P-CSCF receives the ICID in SIP signalling, it shall send the ICID to the PDF.

The PDF stores the authorised policy information, and generates an Authorisation Token to identify this decision. The Authorisation Token is passed back to the P-CSCF for inclusion in the SIP signalling back to the UE.

The Authorisation Token is in the form of a Session Authorisation Data Policy Element as described in [11]. The PDF shall include an AUTH_ENT_ID attribute containing the Fully Qualified Domain Name of the PDF and the SESSION_ID attribute.

Upon receiving the bearer authorization request from the GGSN, the PDF shall authorize the request according to the stored service based local policy information for the session identified by the binding information in the request.

- Decision on the binding information:

The authorisation shall contain the decision on verifying the binding information. The PDF shall identify whether the binding information indeed corresponds to an initiated SIP session. If the corresponding SIP session cannot be found, the PDF shall enforce the rejection of this PDP context request by sending an INSTALL and REMOVE decision to the GGSN. The reason for the rejection is indicated by the INSTALL decision with the "noCorrespondingSession" reason in the Authorisation Request Failure Decision. If the PDF is otherwise unable to authorise the binding information, the INSTALL decision shall identify a general authorisation failure with the "authorisationFailure" of the request reason in the Authorisation Request Failure Decision.

The authorization shall also contain decision on the list of flow_IDs contained in the bearer authorisation request sent by the GGSN representing the list of media components intended to be carried in the same PDP Context. This decision shall verify that these media components are indeed allowed to be carried in the same PDP Context. The PDF shall make this decision by comparing the list of flow_IDs contained in the bearer authorization request received from the GGSN to the media component grouping indication information received from the P-CSCF.

In case the UE violates the IMS level indication, and attempts to set up multiple IMS media components in a single PDP context despite of an indication that mandated separate PDP contexts, the PDF shall enforce the rejection of this PDP context request by sending an INSTALL and REMOVE decision to the GGSN. The reason for the rejection is indicated by the INSTALL decision with the "invalidBundling" reason in the Authorisation Request Failure Decision.

If the binding information and the list of flow_IDs are successfully authorised (verified) as per the means described above, the PDF shall also communicate the authorisation details for each media component to the GGSN.

If the PDF has already communicated authorisation for the same authorisation token and flow identifier(s) to this (or another) GGSN, then the previous authorisation shall be revoked, and this revocation shall be communicated to the GGSN.

The authorisation details contain the "Authorised QoS" and the packet classifier(s) of the associated IP flows. In case of an aggregation of multiple media components within one PDP context, the combination of the "Authorised QoS" information of the individual media components is provided as the "Authorised QoS".

Based on the media direction information and the direction of the source provided by the P-CSCF, the PDF shall define the direction (upstream or downstream) of the "Authorised QoS" and the packet classifier(s).

- Packet classifier(s):

~~The PDF shall use the destination IP address(s), destination port number(s) and transport protocol id(s) to formulate a packet classifier(s).~~

- ~~If the source IP address, which is part of the standard 5-tuple for packet-classifying, is provided by the P-CSCF in the SDP, then this shall be used. Based on operator policy the source IP address for bi-directional flows may be identified from the 64-bit prefix of the destination IP address. If the source IP address is not identified by the SDP information and not identified by the 64-bit prefix of the destination IP address then the source IP address shall be wildcarded by the PDF.~~

- The uplink packet classifier shall be formed as follows: The destination address and port number shall be taken from the connection information parameter of the SDP sent by the P-CSCF in downlink direction, while the source IP address may be formed from the address present in the SDP received by the P-CSCF in uplink direction (taking into account only the 64 bit prefix of the address), and the source port number shall be wildcarded. For example, assuming UE A sends an SDP to UE B, the PDF of UE B uses the address present in this SDP for ~~constitute~~ the destination address of UE B's uplink packet classifier, while the PDF of the UE A uses the 64 bit prefix of the same address for ~~constitute~~ the source address of UE A's uplink packet classifier. If the source address is not formed from the 64 bit prefix, the source address shall be wildcarded.
- The downlink packet classifier shall be formed as follows: The destination address and port number shall be taken from the connection information parameter of the SDP received by the P-CSCF in uplink direction, while the source IP address may be formed (in order to reduce the possibilities of bearer misuse) from the destination address in the SDP sent by the P-CSCF in downlink direction (taking into account only the 64 bit prefix of the address) and the source port number shall be wildcarded. For example, assuming UE A sends an SDP to UE B, the PDF of UE a uses the address present in this SDP for ~~constitute~~ the destination address of UE A's downlink packet classifier, while the PDF of UE B uses the 64 bit prefix of the same address for ~~constitute~~ the source address of UE B's downlink packet classifier. If the source address is not formed from the 64 bit prefix, the source address shall be wildcarded.
- ~~If the source port number, which is part of the standard 5 tuple for packet classifying, is not provided by the P-CSCF in the SDP then the source port number shall be wildcarded by the PDF in the packet classifier.~~
- The PDF shall send the destination address and the destination port number for each IP flow associated with the media component.
- "Authorized QoS":

The "Authorised QoS" information (consisting of maximum QoS Class and Data Rate) for a media component is extracted from the media type information and bandwidth parameter of the SDP. The PDF shall map the media type information into a QoS Class which is the highest class that can be used for the media. The PDF shall use an equal QoS Class for both the uplink and the downlink directions when both directions are used. As an example, the audio media type shall be mapped into QoS class A.

The PDF shall derive the Data Rate value from the "b=AS" SDP parameter. The "b=AS" parameter in the SDP shall contain all the overhead coming from the IP-layer and the layers above, e.g. UDP and RTP. If RTP is used, then overhead coming from RTCP shall be added by the PDF when determining the data rate value applicable for the media component.

For non-real-time bearers the Data rate value shall be considered as the maximum value of the 'Maximum bitrate' parameter.

In case of an aggregation of multiple media components within one PDP context, the PDF shall provide the "Authorised QoS" for the bearer as the combination of the "Authorised QoS" information of the individual media components. The QoS Class in the "Authorised QoS" for the bearer shall contain the highest QoS class amongst the ones applied for the individual media components and indicates the highest UMTS traffic class that can be applied to the PDP context.

The Data Rate of the "Authorised QoS" for the bearer shall be the sum of the Data Rate values of the individual media components/IP flows and it is used as the maximum Data Rate value for the PDP context.

The detailed rules for calculating the "Authorized QoS" are specified in 3GPP TS 29.208 [18].

The PDF may include the gate enabling command as part of the authorisation decision, for instance to enable early media. Alternatively, the PDF may provide a separate decision for opening the gate.

The PDF shall send the IMS charging identifier provided by the P-CSCF as part of the authorisation decision to the GGSN.

Upon receiving the modified SDP information from the P-CSCF, the PDF shall update the media authorization information for the session. The PDF may push this updated authorisation information to the GGSN. Under certain condition e.g. revoke of authorization, the PDF shall push the updated policy decision to the GGSN.

CHANGE REQUEST

⌘ **29.208 CR 051** ⌘ rev **2** ⌘ Current version: **5.5.1** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	⌘ Session modification without adding or removing media lines		
Source:	⌘ TSG_CN WG3		
Work item code:	⌘ E2EQoS	Date:	⌘ 30/10/2003
Category:	⌘ F	Release:	⌘ Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)	2	(GSM Phase 2)
	A (corresponds to a correction in an earlier release)	R96	(Release 1996)
	B (addition of feature),	R97	(Release 1997)
	C (functional modification of feature)	R98	(Release 1998)
	D (editorial modification)	R99	(Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

Reason for change:	⌘ There is no signalling flow and description in TS 29.208 for a "session modification without adding or removing media lines" specified in TS 29.207 (refer to subclauses 5.1.3 and 5.2.1.2 in TS 29.207).
Summary of change:	⌘ A signalling flow and a textual description are added in the TS.
Consequences if not approved:	⌘ A relevant description of a Go interface related operation is missing from the specification, which may lead to incompatible or inconsistent implementations.

Clauses affected:	⌘ 6.6										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> </table>	Y	N	⌘	X	⌘	X	⌘	X	Other core specifications Test specifications O&M Specifications	⌘
Y	N										
⌘	X										
⌘	X										
⌘	X										
Other comments:	⌘										

How to create CRs using this form:

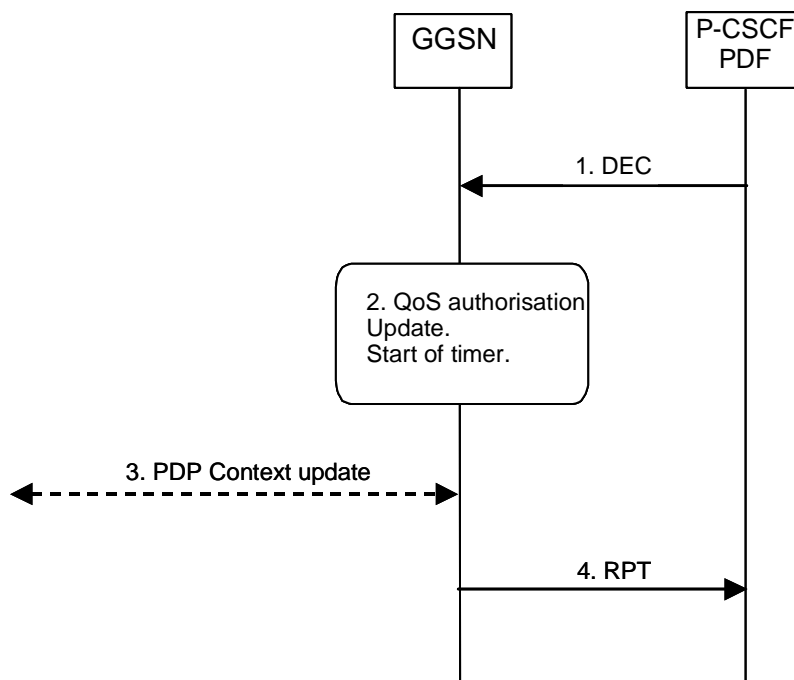
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- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

6.6 Session modification initiated SBLP authorization decision

The GGSN receives an unsolicited authorization decision from the PDF, when a session is modified without adding or removing media lines (refer to 3GPP TS 29.207 [7]). The authorization update operation through the Go interface, described in figure 6.6, is identical in the originating and terminating cases. If the existing QoS of the PDP context exceeds the updated authorised QoS and the UE does not modify the PDP context accordingly, the GGSN shall perform a network initiated PDP context modification to reduce the QoS to the authorised level (as shown with the dash arrows in the figure).



1. The PDF sends a COPS DEC message to the GGSN to indicate the change of the authorised QoS resources (e.g. bandwidth or port numbers).
2. The GGSN updates the QoS authorization information of the session and starts a timer to supervise the PDP context update.
3. If the existing QoS of the PDP context exceeds the updated authorised QoS and the UE does not modify the PDP context accordingly, the GGSN sends an Update PDP Context Request message to the SGSN after the expiry of the timer.
4. The GGSN sends a COPS RPT message back to the PDF.

Figure 6.6: Authorization update upon session modification without adding or removing media lines

CHANGE REQUEST

⌘ **29.208 CR 050** ⌘ rev **2** ⌘ Current version: **5.5.1** ⌘

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Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	⌘ Approval of QoS commit as a part of the authorization decision for early media		
Source:	⌘ TSG_CN WG3		
Work item code:	⌘ E2EQoS	Date:	⌘ 29/10/2003
Category:	⌘ F	Release:	⌘ REL-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
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	D (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

Reason for change:	⌘ It is stated in TS 29.207 that: - "The "Approval of QoS Commit" command may either be part of the authorisation decision, or the PDF may provide a separate decision with the "Approval of QoS Commit" command to open the gate." - "The PDF may include the gate enabling command as part of the authorisation decision, for instance to enable early media. Alternatively, the PDF may provide a separate decision for opening the gate." However the case of Approval of QoS Commit as a part of the authorization decision is missing in TS 29.208. For early media, the opening of the gate needs to be done before the 200 OK(INVITE) at the QoS authorization phase. Typical examples of early media generated by the callee are ringback tone and announcements. Early media generated by the caller typically consist of voice commands or DTMF tones.
Summary of change:	⌘ The case of approval of QoS Commit as a part of the authorization decision is added in TS 29.208.
Consequences if not approved:	⌘ Incomplete specification

Clauses affected:	⌘ 5							
Other specs	⌘	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px 5px;">Y</td> <td style="padding: 2px 5px;">N</td> </tr> <tr> <td style="padding: 2px 5px;"><input type="checkbox"/></td> <td style="padding: 2px 5px;"><input checked="" type="checkbox"/></td> </tr> </table>	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other core specifications	⌘
Y	N							
<input type="checkbox"/>	<input checked="" type="checkbox"/>							

Affected:

<input checked="" type="checkbox"/>	Test specifications
<input checked="" type="checkbox"/>	O&M Specifications

Other comments: ☞

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5 Resource reservation flow with Service-based local policy

This clause describes a resource reservation flow with service based local policy. The service based local policy is done via exchange of information through the Go interface. The Go interface allows the service based local policy and QoS interworking information to be requested by the GGSN from a PDF.

Figure 5.1 presents the "Resource Reservation" procedure at PDP context activation to both the Mobile Originating (MO) side and Mobile Terminating (MT) side.

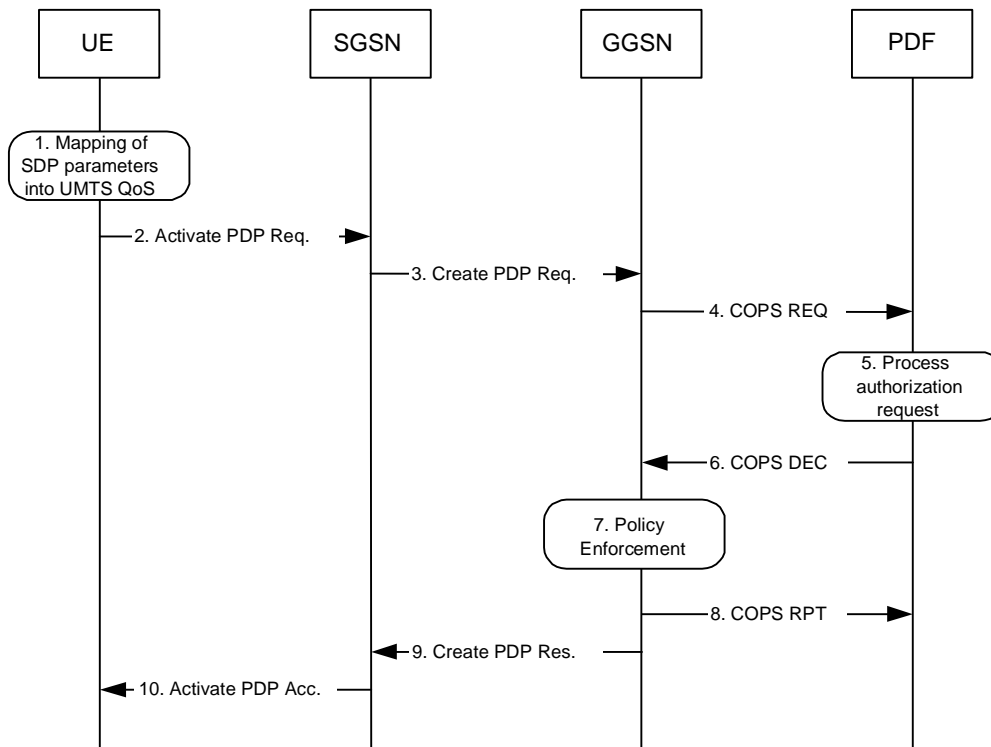


Figure 5.1: Resource reservation flow with service based local policy

1. Mapping from SDP to UMTS QoS parameters

The UE uses the SDP parameters in order to define the UMTS QoS parameter needed to request a PDP context. The QoS parameter mapping mechanism is described in clause 7.2.

2. GPRS: Activate PDP Context Request (UE to SGSN)

The UE sends an Activate PDP Context Request message to the SGSN with the UMTS QoS parameters. The UE shall include binding information in the PDP context activation messages to associate the PDP context bearer with policy information. The authorization token is sent by the P-CSCF to the UE during SIP signalling.

3. GPRS: Create PDP Context Request (SGSN to GGSN)

The SGSN carries out the procedures identified in 3GPP TS 23.060 [4] related to the PDP context activation.

4. COPS: REQ (GGSN to PDF)

The GGSN receives the PDP context activation request with the binding information. The GGSN uses the authorisation token in order to localise the PDF. The GGSN sends a COPS REQ message to the PDF and includes the binding information.

5. Process Resource Request (PDF)

The PDF receives the information sent by the GGSN. The PDF identifies the multimedia session by using the binding information. The PDF performs an authorization decision. [The PDF may include the gate enabling command as part of the authorisation decision, for instance to enable early media as described in 3GPP TS 29.207 \[7\].](#)

6. COPS: DEC (PDF to GGSN)

The decision taken by the PDF is returned via the COPS DEC message. The DEC message includes the policy information to be used by the GGSN in order to perform the policy-based admission control.

7. Policy Enforcement (GGSN)

The GGSN enforces the PDF policy decision on the IP flows based on the received authorization information from the PDF for the media components carried by the PDP context.

8. COPS: RPT (GGSN to PDF)

The GGSN sends COPS RPT message back to the PDF and reports its success or failure in carrying out the PDF decision.

9. GPRS: Create PDP Context Response (GGSN to SGSN)

The GGSN accepts the PDP context request based on the results of the authorisation policy decision enforcement. If the requested QoS parameters are not within the authorized QoS, the GGSN downgrades the requested UMTS QoS parameters.

10. GPRS: Activate PDP Context Accept (SGSN to UE)

The SGSN sends an Activate PDP Context Accept message to the UE indicating that the PDP context has been activated and that the QoS requirements have been authorized successfully for both downlink and uplink.